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Wireless Broadband
A "Silver Bullet for Poverty"

Digital Divide Case Study

People's Emergency Center
Philadelphia, PA

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About the Author

Matt Stone is a co-founder and the Government Strategist for Civitium LLC. He has worked with government leaders at every level as a Warner Robins, Georgia City Council member, former speechwriter and advisor to now Georgia Governor Sonny Perdue, and Wireless Coordinator with the Georgia Department of Education.

Earlier this year, Matt authored "Wireless Broadband: The Foundation for Digital Cities," a cookbook for local leaders interested in deploying wireless broadband networks in their community.

In 2003, Matt helped create the Wireless Houston County Committee and was elected its first chairman. The group, composed of state and local leaders in partnership with leading technology firms, has worked to deploy a countywide wireless broadband network.

Matt has spoken at many recent technology conferences and events throughout the U.S. about what steps communities can take to become Digital Cities using wireless broadband technology.

Introduction

Built in the shadow of Drexel University and the Avenue of Technology, the People's Emergency Center (PEC) in West Philadelphia is a social service nonprofit organization that provides emergency shelter for the homeless and affordable housing for low-income and disadvantaged families. PEC is located in the Saunders Park and West Powelton neighborhood, an area that is home to many families with a median income of less than $20,000 per year. Founded in 1972, PEC is the oldest homeless shelter for families in the state of Pennsylvania.

During the spring of 2002, PEC took the T-1 it used for office connectivity and split it to deploy a Wi-Fi network for community residents. Since the wireless technology was inexpensive and the monthly T-1 was already a budgeted item, families living in the neighborhood were able to subscribe to the wireless broadband network for only $5 per month.

Many residents could not afford a new computer to access the network, and residents with computers often lacked the skills to use it effectively. PEC began offering a training program for its residents, and students who completed the course were able to purchase a refurbished Pentium II or faster computer with a wireless card for only $120.

As residents began using the computers, PEC partnered with government agencies and non-profit organizations to provide unique, relevant content and enable timesaving applications for the community. More computer users resulted in more calls for technical support, and PEC's one full-time technology expert could not meet the need. So the neighborhood non-profit began offering technical training classes to teenagers in the community – today, a number of these students provide the support for residents.

The simplicity of the model, combined with the emergence of affordable wireless broadband technology, provides a scalable approach for the thousands of communities facing Digital Divide issues today.

As a young child, Aaron Brickhouse lived with his mother at PEC's shelter because they could not afford to live anywhere else. A decade later, Aaron was living in an affordable housing unit developed by PEC, only a block away from their wireless hub. A high school student at the time, he had developed an interest in engineering and computers. PEC's staff was experimenting with how technology could help residents improve their lives.

After taking nearly every computer and science class offered at his high school, Aaron started helping PEC with computer repair work. Soon, he was hired part-time and now he restores used computers that are sold to PEC residents, provides assistance during technology training classes for high school students, and helps manage the wireless network. He also helped set up a wireless network in his high school.

Both his mother and sister have completed the PEC training program and have received computers with wireless access. After Aaron was able to repair a computer in a week that his boss could not fix in a month, he was allowed to keep the computer for himself. Everyone in the family subscribes to PEC's Wi-Fi network.

Aaron's mother is in nursing school and uses the Internet for homework help and to search for nursing jobs. Aaron is preparing to start classes at a community college and then attend engineering school at Drexel University. Despite the challenges he has faced, he is confident about his skills and future, saying "one day, I might just build a better computer, because I think I can."

The Network

Gloria Guard, who has been PEC's president for 21 years, is a passionate advocate for the homeless, and views PEC's digital inclusion program as "a silver bullet for poverty." In March 2003, she approved the new program for the Wi-Fi network and support services. The program's goal was to get "people interested in the Internet who would not have been there otherwise."

Developed by One Economy, the model encourages nonprofit organizations or public housing authorities to provide affordable broadband connectivity for low-income and disadvantaged residents. The network deployment took only two months to complete and included the deployment of five Cisco access points throughout the five-block neighborhood. The United Way and Unisys partnered with PEC to fund the initial deployment and secure the network.

Figure 1 -- PEC President Gloria Guard with Young Residents

Since residents cannot afford regular rates for broadband access, PEC provides Wi-Fi access to neighborhood residents for only $5 per month. The network usually has between thirty and seventy users at any one time, and PEC currently has 100 monthly subscribers.

Figure 2 – Cisco Antenna Atop PEC's Family First Building

When residents leave PEC, Guard observes an interesting trend. "Once people have [broadband] access and a computer, they are hooked," she says. One family subscribed to the Wi-Fi service at PEC, but recently moved to another area in Philadelphia where their only option was cable and DSL. Though the cost for such service averages $30-60 per month, the mother has started saving money each month so that her family will be able to afford broadband. Other families do not want to leave PEC and the West Powelton neighborhood because of the affordable broadband access.

Although Guard and One Economy are not "married" to wireless as the only broadband technology, both acknowledge that its inexpensive infrastructure costs and high speeds make it a very attractive solution. Alec Ross, Senior Vice President of One Economy says that the trend in projects of this type nationwide is to use wireless broadband because it is less expensive and more flexible.

Computers & Training

After the wireless network was operational, PEC launched the Digital Inclusion Program to train neighborhood residents about computers and basic programs while also earning the ability to purchase a refurbished computer for $120. The training program runs for six weeks and focuses on "basic word processing, spreadsheets, e-mail and Internet use."

Tan Vu, PEC's Digital Inclusion Program Manager, runs the training program and oversees the daily operation of the wireless network. When residents show uneasiness or fear about computer training, he responds by telling them "you don't need a Harvard degree, you just have to sit down and learn." Once residents overcome their hesitation, they leave classes excited about their learning abilities. Donna Ongirski, a program graduate, says "after each class, I feel like I'm on a cloud. I never thought I could learn computer and use the Internet!" Tan also designed the training to touch on "things you don't think about at first . . . like how using portable phones and microwaves can cause interference" with the wireless network.

As the instructor, Tan sees how training can affect entire families. When parents attend class, their children usually tag along and get involved as well. However, he admits that infants can be distracting to the rest of the class and suggests that any training program offer childcare service.

In Philadelphia, the Cox family – three generations of women sharing a rowhouse – gets high-speed Internet access for $10 per month. It has changed their world.

Taah (pronounced Tay-uh) was an unfocused third-grader whose father is in jail. Her mother Maya, who was 13 when she gave birth to Taah, was told at the time that she probably needed a kidney transplant. Theodora Cox, at 64, faced the added uncertainty of retirement.

Through One Economy Corporation, a pioneering nonprofit group, Theodora engaged in an eight-week training course, which allowed her to purchase a computer for $120 and get wireless broadband for $10 per month through the People's Emergency Center (PEC), a nonprofit social service group in Philadelphia.

Now Taah "is the technical director in her class". Maya and her mother researched kidney diseases and corresponded with patients and doctors in other countries, who are often more responsive than local doctors. And Theodora uses the Internet to help her sell a line of candles to people in the neighborhood.

Source: Washington Post, *Program Bridges the Gap in Affordability of High-Speed Internet*, August 9, 2004

When students complete the course, they can purchase a refurbished Pentium II (or faster) computer with either a wireless card or modem for $120. To date, over 100 West Powelton residents have taken advantage of the offer. At first, PEC subsidized the hardware cost for residents, but now companies throughout Philadelphia donate used computers to PEC because of the program's success.

Applications & Content

Once the wireless network was deployed, it was critical for the PEC program to provide relevant, informative content for residents. Fortunately, One Economy not only assisted in the network deployment but also in content development. One Economy's Beehive is a website with content to connect low-income and disadvantaged residents with the information they need to become self-sufficient and successful. Beehive visitors can learn to do many life skills while on the website including:

- Opening and managing a checking account
- Using an ATM
- Finding a local doctor or dentist
- Getting help for homework
- Choosing a local childcare provider

According to Alec Ross, Beehive receives over 600,000 visitors each month. In addition to the general content that One Economy's website provides, each community can develop a personalized beehive.org portal. Ross says that this allows "community stakeholders to own their programs and tools." PEC uses a Philadelphia Beehive portal, which allows visitors to connect with local social services agencies, child and health care providers, and read the local news.

In partnership with the Pennsylvania Department of Public Welfare, PEC is piloting a new program called E-Assist, which allows residents to submit forms and paperwork to the social services department via email. Guard says, "homeless moms on average spend eleven to fourteen hours a month interacting face-to-face with a number of human services departments." Often, welfare recipients have to wait for hours just to meet with their caseworker. Such time commitments make it difficult, if not impossible, for someone to keep a job, according to Guard.

Since the E-Assist program kicked off, over forty residents have requested E-Assist accounts and twenty families are currently using the program. Linda Mitchell has used the program since January to send her caseworker reports on her childcare costs, which she is then reimbursed for on a monthly basis. It saves Linda time because "you don't got to wait in line all day."

Figure 3 – Tan Vu and E-Assist User Linda Mitchell

Alicia Rivera, another E-Assist user, says, "having a computer at home helps me to communicate with my caseworker. It saves me a lot of time not going to the County Assistance Office. I prefer using a computer to going to the office any day." As a result of the program, Tan reports that E-Assist participants not only save time and avoid lines, but they learn how to communicate over email, use a scanner, and open PDF files.

Support

With a neighborhood network and over 100 daily users, PEC receives lots of tech support calls. As the single program manager, Tan was unable to fill all of the requests himself. In partnership with the United Way and One Economy, Tan created the Teen Technology Network (TTN) to train high school students on computer repair, network troubleshooting, and website design.

Though Tan admits that "most of these kids were considered failures in school," once they are exposed to computers and learn how to fix them, "it's a process" to help them learn a marketable trade. While training classes focus on technology, there is also a reading and math component. At the end of the training class, students receive a refurbished computer for free. Over 100 students have gone through the program, and results show that students are raising their math and reading abilities and that the training has led to over half the students receiving paid technology internships with local companies.

Students trained in HTML and Flash help businesses located in the West Powelton neighborhood build websites. Every month, TTN students spend a day visiting with local business owners and educating them about the Internet, e-commerce, and the importance of a business website as part of their marketing strategy. Interested business owners then work with the students to build and launch their company website.

When PEC decided to deploy a wireless broadband network, Cisco Systems employees conducted an RF site survey to measure sources of interference and optimize the network architecture. Then the company donated the access points and other equipment necessary for the network.

Vince Kelly, a Cisco engineer, now offers a technology training course every Friday night at PEC. Interested high school students learn about the fundamentals of voice and data communication, including the OSI Model and the Fresnel Zone.

"Its amazing the kind of reception the students have . . . they're like sponges," Vince says. The volunteer instructor once started a class by asking the students to present and explain the material covered the week before. The students "repeated verbatim" the lesson on advanced wireless technology. Though the class covers "hard core material," Vince says the students are "unbelievable. They want to learn this stuff."

Figure 4 – Aaron Brickhouse Repairs a Computer

Though the West Powelton neighborhood is less than one mile from University City and Drexel University, the opportunity for higher learning might as well be on the other side of the world for many of these high school students – until they enter the TTN program and begin learning about computer science.

Aaron Brickhouse has helped teach some of the TTN courses at PEC, "showing [the students] basic programs for computers and showing the more complicated parts of a computer," according to Tan. In a recent class, Aaron opened the computer and helped the students learn each part, what it does, and where it goes. Then, he helped them "take the pieces out and then put it back together."

Like many who complete the class, Aaron now has a paid, part-time internship with PEC using his computer knowledge. According to Aaron, his job description is to "repair old computers and restore them. I help people over the phone so they don't always have to bring the computers in. We can give them a solution." Tan, Aaron's boss,

"realized that he knows troubleshooting stuff, so when there's any wireless issues in the community, he's the one to go out and troubleshoot."

Aaron understands the advantage such hands-on work will give him in the future. "Long term, it will help me get insight . . . to figure out how things work. The more I can learn about one technology, the better I'll do with the next." As he prepares to start community college, Aaron is not worried about his new classes because "I [will] understand what he is teaching because I've been doing it here."

Scaling the Model

One Economy, in partnership with PEC, has identified a model that can be replicated in every community in America. The most fundamental requirement is a nonprofit organization, local community group, or government with existing Internet access and a compassionate desire to connect low-income and disadvantaged residents with the highest possible connection to the tools they need to be successful.

However, the following traits are needed to start and sustain a project of this type:

- Committed, Passionate Leadership – Guard's passionate belief that wireless broadband, content, hardware, and training could enable life-changing applications has been critical to PEC's ongoing success. Without it, no project could succeed. With it, few projects could fail.

- Dedicated Project Manager – Gloria says, "if you don't have a Tan, the Digital Inclusion program manager, you don't have a program." Successful initiatives must include a full-time position to oversee the network, training, etc.

- Sustainable Funding Strategy – While Wi-Fi network equipment can be deployed inexpensively, it is critical to have funding to sustain network upgrades, personnel support, etc. for the program to continue.

- Physical Assets – PEC owns every building it has Wi-Fi access points mounted to, which gives them great control over the network equipment. Owning the real estate under the network allows quicker installation and easier network management.

- Childcare During Training – Though children who are old enough to learn from and understand the technology training should be welcomed with their parents, infants and toddlers can distract everyone else and hurt the learning process for everyone.

- Partnerships – PEC has partnered with national nonprofit organizations and private companies for project funding, website development, and training content. Partnerships are critical because they allow organizations without a core focus on technology to provide wireless connectivity to their neighborhood community.

- Computer lab – access to a computer lab, library or university makes training easier.

Already, the One Economy model is being used in large cities to provide broadband to low-income and disadvantaged residents. However, there are still millions of people like Aaron who can take advantage of technology to improve their lives – but only if technology can be made more affordable. With the maturity of wireless broadband technology, it is more economical than ever to create neighborhood hot zones and provide high-speed connectivity. Partners like One Economy and the United Way are eager to support community efforts of this nature with online content and training materials.

Guard refers to PEC's work as a "pebble in the pond." The dedicated work of a few is changing the lives of many - and the ripples are only beginning.